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Putting the OPMH to the Test in Bilingual Aphasia

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The Obligatory Phonological Mediation Hypothesis (OPMH) assumes that mapping of a lexical-semantic structure to an orthographic word form in the orthographic output lexicon first *requires* access to the phonological output lexicon (Luria, 1970). Consequently, any effects on written naming should be accompanied by the same effects in spoken naming.

Aim

To test for the OPMH in bilingual aphasia by comparing noun and verb written to spoken naming in two languages of a multilingual speaker with moderate anomia, in Greek and English, which contrast in morphological complexity, orthographic transparency, and alphabetic script.

Methods

The participant (AA), a 25-year-old right-handed male with a left parieto-occipital lesion, is a university-student, highly proficient in Greek (predominant language, L1) and English (L2). AA had no pre-morbid writing disorder and his vision and hearing are normal. He was administered a range of tests in both languages, including the Boston Diagnostic Aphasia Examination, the Greek Object and Action Test, and other tests relevant to orthographic and phonological processing. His comprehension across language tasks in both languages was intact. However, he presented with moderate anomia in Greek and English. AA was shown photographs of concrete nouns and verbs individually and asked to describe the picture using one word in the language tested. Each language was tested at least one week apart and all subtests presented in random order. Spoken and written naming was tested separately.

Results

A chi-square analysis revealed a significant difference in written naming performances between L1 and L2 (χ^2=3.429; p<.001), with AA showing better written performance in L1, for both verbs (χ^2=5.250; p=.022) and nouns (χ^2=42.857; p<.001). Furthermore, there was a significant difference in AA's performance for written verbs compared to written nouns in L1 (χ^2=5.950; p<.001), with a significantly better performance for verbs. For spoken naming, chi-square analysis revealed a significant difference in performances between L1 and L2 (χ^2=21.429; p<.001), with AA showing better overall performance in L1, for both verbs (χ^2=8.679; p=.003) and nouns (χ^2=27.429; p<.001). See table 1 for raw scores.

Conclusions

This is the first report of a three-way interaction between grammatical class, modality of production, and language status, i.e. between the first (L1) and the second acquired language (L2). Thedissociation between action/verb and

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object/noun naming in written and spoken word output is strong evidence *against* the OPMH. The findings froma multilingual speaker verifiesthat grammatical category is an organizing principle of the language system shared across languages, as argued by Miozzo et al.(2010).

References

Luria, A. R. (1970). *Traumatic Aphasia*. The Hague: Mouton.

Miozzo, M., Costa, A., Hernández, M., & Rapp, B. (2010). Lexical processing in the bilingual brain: Evidence from grammatical/morphological deficits. *Aphasiology* 24: 262–287.

Table 1. AA's correct responses in L1 and L2 across naming tasks for verbs and nouns

		L1 % (no.) correct		**L2 % (no.) correct**	
Naming Task	***N***	***Verbs***	***Nouns***	***Verbs***	***Nouns***
Written	84	80.9% (34/42)	66.6% (28/42)	16.6% (7/42)	19.0% (8/42)
Spoken	84	45.2% (19/42)	40.5% (17/42)	28.5% (12/42)	28.5% (12/42)